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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/893,676
Filing Date: June 29, 2001
Appellant(s): SON ET AL.

Son et al.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/5/06 appealing from the Office action mailed 2/24/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, and judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The amendment after final rejection filed on 1/30/06 has been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,552,704	ZAVRACKY	4-2003
6,504,523	SUGAWARA et al.	1-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 7-17, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zavracky et al. (Patent No.: US 6,552,704) in view of Sugawara et al. (Patent No.: US 6,504,523).

Regarding claims 1 and 13, Zavracky teaches a method of driving a liquid crystal display device (1112 fig. 12A) during one display frame (i.e., frame 1, fig. 12B), comprising the steps of:

applying one of a high level common voltage (Vcom high) and a low level common voltage (Vcom low) to a plurality of liquid crystal cells of the liquid crystal display device (1112) to write data into the liquid crystal cells within a time interval shorter than one display frame interval (col. 10, lines 37-65);

applying common voltage (common voltage value between Vcom high and Vcom low from one subframe to a next subframe) to the plurality of liquid crystal cells after applying the one of the Vcom high and the Vcom low (col. 10, line 66 to col. 11, line 22); and

turning on a backlight (i.e., LED backlight, 1111, figs. 12A, 12B) after said data writing to display an image (col. 11, lines 1-46).

Zavracky differs from claims 1 and 13 in that he does not specifically teaches applying the common voltage value between Vcom high and Vcom low is a reference common voltage.

Sugawara teaches applying a reference common voltage (Vcom = 0V from the time of t14 to t15) to the plurality of liquid crystal cells after applying the one of the high-level common voltage (Vcom = 5V before the time t13) and low-level common voltage (Vcom = -5V from the time of t13 to t14) (fig. 9, col. 6, lines 52-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the reference common voltage as taught by Sugawara in the system of Zavracky in order to provide a suitable potentials output are delivered sections to prevent the flicker phenomenon and improve the picture quality.

Regarding claims 2 and 15, referring to Fig. 12B, Zavracky further teaches after applying one of the high-level common voltage and the low-level common voltage, the liquid crystal cells to respond according to the data written between the time when the data is written and when the backlight (1111) is turned on (col. 11, lines 1-35).

Regarding claims 3 and 14, the combination of Zavracky and Sugawara teaches the reference common voltage lower than the high-level common voltage and greater than the low-level common voltage (col. 2, lines 43-58 and col. 6, line 66 to col. 7, line 20 of Sugawara).

Regarding claims 4 and 17, referring to Fig. 12B, Zavracky teaches re-aligning the liquid crystal cells after the step of turning on the backlight (col. 13, lines 23-49).

Regarding claim 7, Zavracky teaches when data is being written, an effective voltage remaining in the liquid crystal cell is larger than a data voltage applied to the liquid crystal cell (col. 11, line 64 to col. 12, lines 8).

Regarding claims 8 and 20, the combination of Zavracky and Sugawara teaches the high-level common voltage is 5V (Fig. 9 of Sugawara). Although the combination of Zavracky and Sugawara does not specifically teach the high-level common voltage is >= 5V. However, it would have been obvious to obtain the high-level common voltage is >= 5V in order to maintain a large effective voltage to the liquid pixel cells.

Regarding claims 10 and 22, the combination of Zavracky and Sugawara teaches the low level common voltage is –5V (Fig. 9 of Sugawara).

Regarding claims 9 and 21, Zavracky further teaches the high-level common voltage is equal to a gate high voltage applied to a gate electrode of a thin film in transistor of the liquid crystal cell (Figs. 12A and 12B, col. 10, lines 55-67, col. 11, lines 1-22).

Regarding claims 11 and 23, Zavracky further teaches the low-level common voltage is equal to a gate low voltage applied to a gate electrode of a thin film transistor in the liquid crystal cell (Figs. 12A and 12B, col. 10, lines 55-67, col. 11, lines 1-22).

Regarding claims 12 and 24, Zavracky teaches the driving method is applied to twisted nematic mode liquid crystal display device (col. 13, lines 1-2).

Regarding claim 16, Zavracky further teaches one of the high level and low level common voltages (i.e., VcomLow) is applied to the liquid crystal cells after the step of turning on (Fig. 12B).

3. Claims 5, 6, 18, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(10) Response to Argument

In response to Applicants' argument stated "Sugawara fails to teach or suggest at least the step of applying a reference common voltage to the plurality of liquid crystal cells after applying the one of the high-level common voltage and low-level common voltage" (page 4, lines 15-17) and "specifically, Sugawara et al., as discussed above..." (page 7). Examiner respectfully disagrees. Sugawara teaches applying a reference common voltage (Vcom = 0V from the time of t14 to t15) to the plurality of liquid crystal cells after applying a high-level common voltage (Vcom = 5V before the time t13) or a low-level common voltage (Vcom = -5V from the time of t13 to t14) (col. 6, lines 52-60). At the time period from t14-t15, the common voltage Vcom of the common electrode 76 rises –5 volts to zero volt (col. 7, lines 54-60). This Vcom = zero volt is applied to pixels is considered as a reference common voltage (the claimed limitation does not specifically defined *a reference common voltage*. Therefore, any Vcom value differs from Vcom high and Vcom low is considered). In resulting, the flicker due between frames is prevented and the display brightness is improved.

For the above reasons, it is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

Jennifer Nguyen

5/29/07

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